Tanulmány

Pálinkás István

The 'Pragmatic' Blend

Abstract

Psychological evidence suggests that human meaning construction tends to favour analogs that have several kinds of correspondences at different levels of linguistic organization: semantic similarity, pragmatic relevance and isomorphism (for a detailed study of these constraints, see Thagard et al. 1990). Although most theorists of analogy acknowledge that processing goals and context might exert some influence on analogical inference, they differ as to whether such pragmatic constraints *directly* enter into the mapping process.

My main objective in the present paper, thus, is to show that an adequate model of analogical thinking in general and metaphor processing in particular should take into account the context of reasoning not only *prior to* and *after* the analogical mapping but also *during* its operation. I will explicate my views on pragmatic influence in speech representation within the theoretical framework of *conceptual integration* (or blending), an essential though interim phase of metaphorical extension.

1 Linguistic background

1.1 Conceptual Integration Theory

Conceptual blending, initially proposed by Fauconnier and Turner (1998), is a theoretical framework for on-line meaning construction and has the role of explaining the integration of knowledge from multiple conceptual constructs onto an independent and coherent unit, the *blend*. This process model describes a set of principles for combining dynamic cognitive models in a network of *mental spaces*, 'partial representations of entities and relations of any given scenario as perceived, imagined, remembered, or otherwise understood by a speaker' (Coulson & Oakley 2000: 176-177). Conceptual integration involves at least two *input spaces* structured by information from discrete cognitive domains, a *generic space* that contains structure common to all spaces in the network and a *blended space* containing selected aspects of structure from each input space and emergent structure of its own (for a schema, see Figure 1).
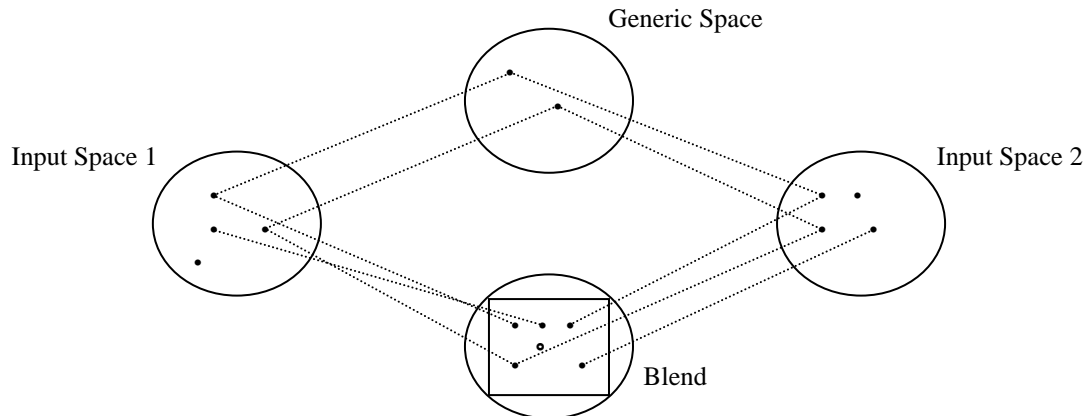
Figure 1: Conceptual Integration Network

Blending involves three basic operations: *composition*, which attributes a relationship from one input space to constituents taken from other input spaces, as in *My karma ran over my dogma*, where a frame for a car accident has been applied to concepts of moral philosophy. *Completion* occurs when information from long-term memory is added to the blend (e. g. because the car frame has the notion of death or severe injury of the dog, the blend is completed with the "death" of the dogma). *Elaboration* is the process of some simulated mental performance in the blend (e.g. blood in the karma-dogma example – see also Coulson & Oakley 2000: 180).

1.2 Metaphor and its relation to blending

Metaphors are a pervasive source of language use, allowing speakers to map a more concrete source domain onto a more abstract target domain, where particular aspects of the source are made to correspond with the target. Through these correspondences we are able to reason about the target domain by using structure from the source. By way of example, in *He is a pain in my neck*, the cause of *anger* is characterized in terms of *physical annoyance* (cf. Kövecses 2000: 21).

Grady et al. (1999) highlight fundamental ways in which blending and metaphor might differ:

- metaphorical mappings are asymmetric in that they are unidirectional (from a more concrete to a more abstract domain), whereas blending is multi-directional, since each input contributes to the blend
- while metaphor operates along exactly two mental representations, blending allows more than two inputs
- metaphorical projections are concerned with entrenched (or well-established) knowledge structures – blending typically results in transitory (or on-line) conceptualizations
- metaphor is often seen as a less motivated process than blending, since the former often maps entities (rather than entities AND relationships) as well as whole domains grounded perhaps in the body and bodily experience in the physical and cultural world (cf. Yu 1995, 1998, 2000), while blending works on mental spaces, partial and tempo -

rary representational structures, 'particular scenarios which are structured by given domains' (Grady et al. 1999: 102).

Although, as so far expounded, metaphor and blending may be algorithmically different process models, I claim that the two are complementary (see also Kövecses 2006). In line with Gentner and Bowdle (2001) I argue that metaphor comprehension involves two successive phases: *alignment* (or blending) and *projection* (or mapping)[1]. The former, where information from the two input spaces is compared and evaluated, is an ephemeral stage. In the case of sufficient similarity across the inputs, metaphorical projection might render reasoning about the target. This is, however, not to say that sense development in metaphors necessarily involves a full-fledged conceptual mapping prior to metaphorical projection, giving the perhaps false impression that a simple metaphor could be analyzed as a *metaphorical blend* (as in Grady et al. 1999)[2].

2   The role of pragmatics in metaphorical extension

The basic claim I am about to advance in this section is that the present state of affairs, the current flow of discourse or the speaker's actual communicative intentions or goals may influence the direction of conceptual mapping prior to metaphorical projections. Before making a start in this direction of analysis, however, I will epitomize the notion of *memory* that I adopt in my discussion. I also mean to explicate the relation between *semantic memory* and *situated conceptualization*.

2.1   *Semantic memory, episodic memory and situated conceptualization*

Although the concept of *memory system* is malleable and its specific features change over theory and time, the notion of semantic long-term memory (Bellezza 1984; Charniak 1983; Hampton 1979; Martin 2001; Martin & Chao 2001; McCloskey & Glucksberg 1979; Quillian 1968; Smith 1978; Smith et al. 1974; Tulving 1972) is occasionally used by advocates of various processing approaches to semantics (see for example, Veale & Keane 1993).

Semantic memory refers to general knowledge of the world – information about particular objects that can be shared by different individuals. In the absence of particular stimulus events, it enables the conceptualizer to represent objects, situations and facts. *Episodic memory* (Griffiths et al. 1999; Tulving 1972, 2001, 2002; Tulving & Markowitsch 1998; Wheeler et al. 1997), on the other hand, denotes memory for personal events and episodes dated in time and located in space. As Tulving (2002) argues, it is the only memory system that allows one to re-experience, through autonoetic awareness, one's own previous experiences[3].

In his reaction to modular semantic-memory views, Barsalou (2005) has proposed a non-modular modal conceptual system, where instead of decontextualized, encyclopaedic databases of conceptual representations, 'a given concept produces many different *situated conceptualizations* [the italics are mine], each tailored to different instances in different settings'

---

[1]   Just to avoid misunderstandings, whenever the tem 'mapping' is used in the remainder of this study, I will use it in the alignment sense, since a detailed study of metaphorical projection, for which the literature generally applies the term '(metaphorical) mapping' is beyond the scope of this paper.

[2]   For discussion of a distorted view of the relation between metaphor and blending, see Pálinkás (2006).

[3]   For criticisms of episodic memory, see Tulving (2002).

(Barsalou 2005: 620)[4]. That is, in Barsalou's assumption no general description of a concept (e.g. that of [CAT]) exists. Instead, in accordance with contextual cues, the conceptualizer might evoke the concept of a mean tom cat, a cat playing in the garden, a purring cat or some other.[5]

In an experiment, Barsalou (2005) provides perhaps more convincing evidence for the role of context in situated action:

(1) The basketball was used when the boat sank.

(2) The basketball was well worn from much use.

Having read (1) above, participants verified FLOATS as a true property of 'basketball' 145ms faster than they did after reading the second, since the context of a boat sinking might make our cognitive apparatus conceptualize 'basketball' as an entity that floats on water.

Barsalou's conceptual system based on the neural re-enactment of modality-specific states, however, does not seem (at least to me) to be without problems. While (1) and (2) above might evoke the concept of a *particular* basketball with more specific (or highlighted) features of conceptualization (a floating ball and a ragged one, respectively), Barsalou's system could have a hard time explaining concepts in no particular contextual setting. As an exemplar, consider the case of a psychological test, where the therapist instructs his patient as follows:

(3) Now, close your eyes and think of a basketball.

In (3) above, as suggested, the conceptualizer has no particular guideline as to the imagery of any kind of (contextualized) basketball. Thus, instead of *concept construction* that most often underlies situated conceptualization, the participant of the test might fall back on the process of *concept retrieval*, perhaps the basic mechanism behind semantic memory.

With the above generalities in mind I assume that the fact that a concept might deliver goal-oriented packages of inferences (as in the cat-example above) does not necessarily preclude the existence of a decontextualized representation of a category, especially if the situated concept is the end-product of pragmatics-driven blending operations from individually shared semantic-memory traces. I will return to this so-called 'encyclopaedic-to-situational' shift later in Section 3, where, in spite of my reservations about Barsalou's views, I *will* use his term 'situated conceptualization' as part of a conception that allows general (or lexically encoded) concept description in the blend, from which an ad hoc (or situated) concept is pragmatically fashioned.

---

[4] See also Carston (2002).

[5] Although concept extraction from episodic memory and situated conceptualization might seem algorithms of the same sort, the former *reconstructs* concepts from already existing long-term memory traces, situated conceptualization is the matter of concept *construction*: either by merging semantic memory information with concept non-inherent properties (as in (2), since being 'ragged' is not inherent in [BASKETBALL]), or by shifting the focus of attention (as in (1), since I consider *[FLOATING BASKETBALL] a related, though situated variant of the lexically encoded [BASKETBALL].

2.2 Approaches to pragmatics in computational models of analogy: SME vs. ACME

As stated in the introductory section, most theories of analogical problem solving offer different assumptions as to the role of pragmatic constraints in conceptual mapping. In what follows, I will give a brief synopsis of the two most definitive structure matchers to date which assign opposing values to speaker-goal effects in analogical mapping.

Gentner's Structure Mapping Theory (Gentner 1983, 1989) with its computational simulation in the structure-mapping engine (or SME, proposed in Falkenhainer et al. 1989) assumes that metaphor representation involves two successive phases: *alignment* and *projection*. In the former phase, systematic inter-structure correspondences (gmaps or global mappings) are identified across the inputs: first, common predicates are traced and then a set of *root gmaps* is constructed by systematically comparing the corresponding arguments of identical predicates in each structure. These partial gmaps then develop into maximal structurally consistent matches between two representations, observing *one-to-one mapping* and *parallel connectivity*. Alignments with high structural relatedness, in which higher order relations constrain lower order relations, are preferred over less systematic sets of commonalities (for an illustration, see Gentner & Bowdle 2001).

The Structure Mapping Theory argues that the mapping process is purely syntactic, where no particular roles are assigned to pragmatic constraints: plans and goals and other aspects of current context influence the analogy process *before* and *after* the analogy engine but not *during* its operation (Gentner 1989: 215)[6].

Although Holyoak and Thagard's pragmatic-computational Analogical Constraint Mapping Engine (ACME) (Holyoak & Thagard 1989) also lays great emphasis on the property of mapping systematicity and isomorphism, it can be characterized as a *natural* and evolutionary model of computation, where similarity, context and isomorphism shape the final interpretation. ACME, thus, operates along parallel constraint relaxation processes, resulting in a sole emergent interpretation, one that is not guaranteed to be either optimal or maximal, nor even wholly *systematic*.

Similarly to SME, ACME also compares two domain descriptions in a predicate-calculus-style representation, resulting in a hierarchical structure of nesting predications. This network, where nodes represent entity correspondences between the source and the target domains, develops through the operation of inhibitory and excitatory linkages. An activated network includes nodes whose activation levels gradually converge towards asymptotic values before the network settles, that is before scores of its nodes have reached their asymptote.

Taken together, although both SME and ACME are computational models of analogical problem solving, they differ as to the underlying processing algorithm in general and as regards the role of context in conceptual mapping in particular. While Gentner allows pragmatic 'attenuation' only *prior to* and *after* conceptual mapping, Holyoak et al. (see for example, Spellman & Holyoak 1996) argue that goal-irrelevant aspects of the source and target domains might escape pre-mapping pragmatic inhibition. As a corollary, contextual screening, as a means of filtering out such pragmatically immaterial information, is inevitable in the mapping (or blending) phase of analogical reasoning.

---

[6] Nonetheless, a variant of SME does admit a role for pragmatics (see Forbus & Oblinger 1990).

Although I am hesitant to accept basically computational models of analogy without reservation[7] I agree with Holyoak et al. and argue that pragmatic attenuation in analogical thinking is *not* a matter of 'turning the lights on and off'. That is, context as such does not seem, at least to me, to be some background, speech scene or whatever that can be shut down in the midst of inferential problem solving and which is then reactivated later after the analogy engine, just at the flick of a finger (as suggested by Gentner and her associates).

With the above generalities in mind I will now turn to scrutinizing a concrete example of metaphorical extension with the purpose of identifying pragmatic traces in the initial and ephemeral phase of the process, the blend. In doing so, I will refer back to the notions of *semantic memory*, *episodic memory*, and *situated conceptualization* (explicated in Subsection 2.1).

3   Evidence for pragmatic constraints within the alignment phase of metaphors

Imagine a scene of psychotherapeutic treatment, where the unmarried Ms. Johnson has decided to consult an expert about her depression. Let us assume that the analyst has not even the slightest information or idea about Ms. Johnson's experience with or attitude to (the role of) husbands, men, fathers, etc. The following exchange occurs:

(4) Psychotherapist: And now, Ms. Johnson, please describe what the notion of [HUSBAND] means to you.

(5) Ms. Johnson: Well, I think husbands are wolves.

At this point of the discourse, the analyst has two basic input concepts for his inference-drawing mechanisms: [HUSBAND] and [WOLF]. Both might be retrieved from long-term semantic memory and are integrated in a blend, where a full-fledged, context-independent encyclopaedic knowledge about [HUSBAND] and [WOLF] is analyzed by the structure matcher, in pursuit of some relevant inference[8].

I claim that the SME framework would have a hard time explaining the representation of the underspecified metaphor in (5), since no particular contextual cues attenuate the inputs prior to mapping. Seeing that SME discards pragmatics from the mapping stage, allowing only a predicate-calculus-style analysis, I have difficulty seeing how systematicity alone could provide the desired inference(s), since the predications for [HUSBAND] that generally hold with respect to [WOLF] could be: 'voracious', 'grabbing', 'fiercely cruel' or perhaps others[9].

Rather, contextual cues should provide some guideline as to the direction of search for isomorphic relational structures across the inputs. Given the conceptual constructs provided by long-term semantic memory, some *change in perspective* (cf. situated conceptualization in

---

[7]   Especially Kintsch's theory of metaphor comprehension, in which meaning is represented 'geometrically, that is, mathematically, which means that we can calculate with meanings' (Kintsch & Bowles 2002: 250).

[8]   This is, of course, not to say that Ms. Johnson would definitely retrieve context-independent semantic memory traces of [HUSBAND] and that of [WOLF] in or after uttering (5) and go through the same structure-mapping process as the analyst does. Rather, behind her generalization she might have particular experience with a husband (or husbands) in mind, justifying her choice of [WOLF] as the source. Such personal experience could be, for instance, her father was always ravenously hungry after work, or that he cheated on his wife, exactly the sort of information that is reconstructed from *episodic memory*.

[9]   For a detailed description of the epistemological and factorial shortcomings of SME, see Veale et al. (1996).

Footnote 4) could be constituted by situationally and contextually available information about the focus of attention (see also Bartsch 2002). In our wolf-metaphor, some context, set only after merging [HUSBAND] and [WOLF], might shift the perspective to the social behaviour of husbands. However, without more concrete contextual cues, the analyst would probably be left in the dark about Ms. Johnson's intended implicature(s) and would presumably ask her to clarify what she has just said: whether husbands fight fearlessly for their family, or they are voracious when they are ravenously hungry after an arduous day at work, or even (as cheating husbands) they instinctively prey on women, just like wolves prey on animals, etc.

4   Conclusion

Since meaning construction is a phenomenon that is often described in the cognitive linguistics literature as having a semantic as well as a pragmatic dimension, the present paper has related semantics to pragmatics in a common framework of representation. In doing so, I have considered some basic observations of (1) *lexical pragmatics*, to account for the fact that the concept communicated by use of a word often differs from the concept encoded and those of (2) *conceptual integration* to find relational structure across pragmatically-attenuated inputs. Although I admit that my reasoning about the comprehension of the wolf-metaphor above is highly speculative, appealing to intuition rather than experimental data, it is consistent with the findings of Spellman and Holyoak (1996), who demonstrated the influence of processing goals on analogical mapping. It means that in some cases of meaning construction a blend can be created, where automatically and mostly unconsciously a mapping process begins through pragmatic principles. On this basis we might as well claim that semantics and pragmatics are complementary in speech comprehension (see also Leech 1981).

I also argued against the SME framework for discarding speaker-goal principles from the mapping phase of speech representation and presented evidence for in-blend pragmatic influence. Another defect of basically computational models of analogical problem solving is that the role of *memory* as such is not adequately developed, perhaps with the expectation of the Sapper model, where 'the mapping occurs within a richly elaborated, tangle of conceptual knowledge in long-term memory' (see Veale & Keane 1998). I suppose a semantic-episodic dichotomy or more detailed research of the memory system would provide some valuable insights into both the *composite* of the inputs to conceptual integration and, through this, the *analogical process* itself. These issues might also illuminate the ever-competing hypotheses about the relation between word meaning and concept (see for example, Carston 2002).

References

Bellezza, F.S. (1984): Reliability of retrieval from semantic memory: Common categories. *Bulletin of the Psychonomic Society* 22, 324-326.

Barsalou, L.W. (2005): Situated conceptualization. In: Cohen, H. & Lefebvre, C. (eds.): *Handbook of Categorization in Cognitive Science*. St. Louis: Elsevier.

Bartsch, R. (2002): Generating polysemy: Metaphor and metonymy. In: Dirven, R. & Pörings, R. (eds.): *Metaphor and Metonymy in Comparison and Contrast*. Berlin & New York: de Gruyter.

Carston, R. (2002): Metaphor, ad hoc concepts and word meaning − more questions than answers. *UCL Working Papers in Linguistics* 14, 83-105.

Charniak, E. (1983): Passing markers: A theory of contextual influence in language comprehension. *Cognitive Science* 7, 171-190.

Coulson, S. & Oakley, T. (2000): Blending basics. *Cognitive Linguistics* 11, 175-196.

Falkenhainer, B., Forbus, K.D. & Gentner, D. (1989): The structure-mapping engine: Algorithm and examples. *Artificial Intelligence* 41 (1), 1-63.

Fauconnier, G. & Turner, M. (1998): Conceptual integration networks. *Cognitive Science* 22 (2), 133-187.

Forbus, K.D. & Oblinger, D. (1990): Making SME greedy and pragmatic. In: *Proceedings of the Twentieth Annual Conference of the Cognitive Science Society*. Hillsdale & NJ: Lawrence Erlbaum Associates.

Gentner, D. (1983): Structure-mapping: A theoretical framework for analogy. *Cognitive Science* 7, 155-170.

Gentner, D. (1989): The mechanism of analogical learning. In: Vosniadou, S. & Ortony, A. (Eds.): *Similarity and Analogical Reasoning*. London: Cambridge University Press.

Gentner, D. & Bowdle, B. (2001): Convention, form, and figurative language processing. *Metaphor and Symbol* 16, 223-247.

Grady, J.E., Oakley, T. & Coulson, S. (1999): Blending and metaphor. In: Gibbs, R.W. & Steen, G.J. (eds.): *Metaphor in Cognitive Linguistics*. Amsterdam: John Benjamins.

Griffiths, D.P., Dickinson, A. & Clayton, N.S. (1999): Declarative and episodic memory: What can animals remember about the past? *Trends in Cognitive Science* 3 (2), 74-80.

Hampton, J.A. (1979): Polymorphous concepts in semantic memory. *Journal of Verbal Learning and Verbal Behavior* 18, 441–461.

Holyoak, K.J. & Thagard, P.R. (1989): Analogical mapping by constraint satisfaction. *Cognitive Science* 13, 295-355.

Kintsch, W. & Bowles, A. (2002): Metaphor comprehension: What makes a metaphor difficult to understand? *Metaphor and Symbol* 17 (4), 249-262.

Kövecses, Z. (2000): *Metaphor and Emotion: Language, Culture, and Body in Human Feeling*. Cambridge: Cambridge University Press.

Kövecses, Z. (2006): *Metaphor in Culture: Universality and Variation*. Cambridge: Cambridge University Press.

Leech, G.N. (1981): *Semantics: The Study of Meaning*. Harmondsworth: Penguin Books.

Martin, A. (2001): Functional neuroimaging of semantic memory. In: Cabeza, R. & Kingstone, A. (eds.): *Handbook of Functional Neuroimaging of Cognition*. Cambridge, MA: MIT Press.

Martin, A. & Chao, L. (2001): Semantic memory and the brain: Structure and processes. *Current Opinion in Neurobiology* 11, 194-201.

McCloskey, M. & Glucksberg, S. (1979): Decision processes in verifying category membership statements: Implications for models of semantic memory. *Cognitive Psychology* 11, 1-37.

Pálinkás, I. (2006): The development of the senses. *Argumentum* 2, 191-197. (http://argumentum.unideb.hu)

Quillian, M.R. (1968): Semantic memory. In: Minsky, M. (ed.): *Semantic Information Processing*. Cambridge, MA: MIT Press.

Smith, E.E. (1978): Theories of semantic memory. In: Estes, W.K. (ed.): *Handbook of Learning and Cognitive Processes*. Hillsdale & NJ: Erlbaum.

Smith, E.E., Shoben, E.J. & Rips, L.J. (1974): Structure and process in semantic memory: A featural model for semantic decisions. *Psychological Review* 81, 214-241.

Spellman, B.A. & Holyoak, K.J. (1996): Pragmatics in analogical mapping. *Cognitive Psychology* 31, 307-346.

Thagard, P., Holyoak, K.J., Nelson, G. & Gochfeld, D. (1990): Analog retrieval by constraint satisfaction. *Artificial Intelligence* 46, 259-310.

Tulving, E. (1972): Episodic and semantic memory. In: Tulving, E. & Donaldson, W. (eds.): *Organization of Memory*. New York: Academic Press.

Tulving, E. (2001): The origin of autonoesis in episodic memory. In: Roediger, H.L., Nairne, J.S., Neath, I. & Suprenant, A.M. (eds.): *The Nature of remembering: Essays in Honor of Robert G. Crowder*. Washington, DC: American Psychological Association.

Tulving, E. (2002): Episodic memory: From mind to brain. *Annual Review of Psychology* 53, 1-25.

Tulving, E. & Markowitsch, H.J. (1998): Episodic and declarative memory: Role of the hippocampus. *Hippocampus* 8, 198-204.

Veale, T. & Keane, M. (1993): A connectionist model of semantic memory for metaphor interpretation. Presented at the *Workshop on Neural Architectures and Distributed AI*. Center for Neural Engineering, U.S.C. California.

Veale, T. & Keane, M. (1998): Principal differences in structure-mapping: The contribution of non-classical models. In: Holyoak, K.J., Gentner, D. & Kokinov, B. (eds.): *Proceedings of Analogy '98*. New University of Bulgaria Press.

Veale, T., O'Donoghue, D. & Keane, M. (1996): Computability as a limiting cognitive constraint: Complexity concerns in metaphor comprehension about which cognitive linguists should be aware. In: Hiraga, M., Sinha, C. & Wilcox, S. (eds.): *Cultural, Psychological and Typological Issues in Cognitive Linguistics*. Amsterdam & Philadelphia: John Benjamins.

Wheeler, M.A., Struss, D.T. & Tulving, E. (1997): Toward a theory of episodic memory: The frontal lobes and autonoetic consciousness. *Psychological Bulletin* 121, 331-354.

Yu, N. (1995): Metaphorical expressions of anger and happiness in English and Chinese. *Metaphor and Symbolic Activity* 10 (2), 59-92.

Yu, N. (1998): *The Contemporary Theory of Metaphor: A Perspective from Chinese*. Amsterdam: John Benjamins.

Yu, N. (2000): Figurative uses of finger and palm in Chinese and English. *Metaphor and Symbol* 15 (3), 159-175.